

## Division 10-50.60: Landscaping Standards (P&Z)

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### Sections:

- 10-50.60.010 Purpose and Benefits
- 10-50.60.020 Applicability
- 10-50.60.030 Landscaping Plans
- 10-50.60.040 Landscape Location Requirements
- 10-50.60.050 Landscaping Standards
- 10-50.60.060 [Hydrozones](#)
- [10-50.60.070](#) Water Use and Irrigation
- 10-50.60.0870 Maintenance

Includes P&Z amendments and those approved by City Council, June 7, 2011

Division10-  
50.60\_Landscaping\_CCApapproval\_2011Jun7

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### 10-50.60.010 Purpose and Benefits

#### A. Purpose

The purpose of this Division is to foster the creation of sustainable landscapes appropriate to the unique natural characteristics of Flagstaff. Located on the Colorado Plateau, Flagstaff has frequent dry summers, cold winter temperatures, high altitude and a short growing season that together create special challenges for landscaping. In addition, Flagstaff has limited water resources, and consistent with the General Plan's goal of being a steward of the natural environment, high expectations for the use and management of this precious resource have been established.

1. The intent of this Division therefore, is to provide landscaping standards to:
  - a. Establish and preserve sustainable landscaping that ~~protects and promotes~~ reflects the unique natural character of Flagstaff;
  - ~~a.b.~~ Ensure an appropriate balance between the value of responsible water use and the value of well-designed landscape areas;
  - ~~b.c.~~ Improve community aesthetics;
  - ~~c.d.~~ ~~Protect~~ Conserve native trees and plants ~~energy, water, low-maintenance naturalized plants,~~ and other natural resources;
  - ~~d.e.~~ Improve the quality of the environment by enhancing air quality and reducing the spread of invasive plant species; and,
  - ~~e. —Protect native and low maintenance naturalized plants; and,~~

- f. Provide an applicant with maximum flexibility while ~~ensuring that~~ the public interest in planting viable landscaping and conserving the City water supply is ~~are~~ protected.

Rev. May 25, 2011: Former subparagraph f. (shown as e. above because of the formatting changes) has been combined with subparagraph d.

## 2. Sustainability

This Division establishes regulations for the installation and maintenance of landscaping and screening according to recognized xeriscape and low impact development (LID) principles identified in the City's Low Impact Development Guidance Manual for Site Design and Implementation (LID Manual). The standards found here shall work in combination with the standards found in Division 10-30.70 (Sustainability).

## B. Sustainable Landscaping

This Division creates the framework for sustainably designed landscapes. Landscapes designed for Flagstaff's unique natural environment contribute to a sense of community and result in many environmental, aesthetic and economic benefits. Some of the major benefits of sustainable landscaping are summarized in Table A (Benefits of Sustainable Landscaping).

**Table 10-50.60.010.A: Benefits of Sustainable Landscaping**

<u>Water Conservation</u>	<u>An appropriately designed and maintained landscape area using native and drought-tolerant plants can ensure that water resources are conserved.</u>
Air Quality	Plants improve air quality by absorbing pollutants, thereby reducing odors and filtering impurities.
Defining a Space	Landscaping can be appropriately and artfully arranged to define and frame special views, emphasize focal points, and complement a development's natural or man-made features.
Edible Landscaping	Incorporating edible landscaping creates a multi-functional landscape that provides returns (fruits, vegetables, etc.) on the investment of water, fertilizer, and time. A landscape that provides locally grown produce for consumption can be an important part of reducing energy inputs and environmental impacts.
Energy Conservation	Strategically placed landscaping around buildings will help to conserve energy as vegetation planted close to exterior walls traps air, creating an insulating effect. Trees that provide shade and filter sunlight lower indoor temperatures in the summer, reducing the need for air conditioning. Also, trees and shrubs can serve as windbreaks especially in the winter, to slow wind velocity and reduce heating costs.
Erosion and Runoff Protection	Trees, shrubs, and ground covers reduce soil erosion by binding soil particles with their roots and holding the soil together against the erosive effects of water and wind. Vegetation also slows storm water runoff, which improves water quality in natural drainages and reduces the need for engineered storm water drainage solutions.
Financial	Applicants can also benefit financially from landscaped developments as large

**Table 10-50.60.010.A: Benefits of Sustainable Landscaping**

Benefits	trees, shrubs, and other landscape materials add value to a property. In new developments, trees and other landscaping materials temper the development's newness, add character, and perhaps most importantly, contribute to a sense of place. This is especially so if existing native trees, large shrubs, and other native plants can be preserved on a site or transplanted back into a development.
Glare Reduction	Landscaping is helpful to reduce reflection or glare from the sun, outdoor lights, or vehicle headlights.
Heat Island Reduction	Increasing vegetative cover and installing green roofs reduces heat islands by lowering surface and air temperatures with shade and evapotranspiration.
Low Impact Development	Low impact development measures mimic a site's predevelopment hydrology by using design practices and techniques that effectively capture, filter, store, evaporate, detain, and infiltrate runoff close to its source.
Native Vegetation	<p>Preserving and introducing native vegetation on a development site is essential to a sustainable landscape because native vegetation:</p> <ul style="list-style-type: none"> <li>• Has a high survival rate;</li> <li>• Is already established and needs no additional soil amendments;</li> <li>• Requires less maintenance than non-native plants;</li> <li>• Is drought tolerant, hardy when planted at the correct elevation, and requires little or no supplemental irrigation once established;</li> <li>• Have a better root to leaf ratio;</li> <li>• Requires fewer or no pesticides to maintain than non-native plants; and,</li> <li>• Provides food and shelter for wildlife and attracts a diversity of bird species and other wildlife.</li> </ul>
Noise Reduction	Strategically placed shrubs, ground covers, and trees may reduce noise levels as sound energy is absorbed or dispersed.
Screening	Plants can be used to screen incompatible adjacent uses or above ground and on-site utilities.
Softening the Built Environment	Landscaping can add unique features and a human scale to large structures and can enhance the sense of entry into a building or courtyard.
Storm Water Management	Landscape vegetation reduces the amount and rate of storm water runoff, improving storm water runoff quality, and increases the capacity for groundwater recharge.
Visual Benefits	<ul style="list-style-type: none"> <li>• Plants add visual interest and variety, especially if used to add seasonal color and texture;</li> <li>• Foundation plantings help frame a building and visually anchor it to the site; and,</li> <li>• A variety of plants, selected for their colors, textures, sizes and shapes, should unify and add interest to the overall landscape. The variety can create movement and contribute to the visual balance.</li> </ul>
Visual	Landscaping can unify and organize disparate site or streetscape elements by

**Table 10-50.60.010.A: Benefits of Sustainable Landscaping**

Continuity	creating visual continuity.
Non-quantifiable Benefits	Landscaping's benefits extend beyond measurable economic or physical qualities. Plants possess a special ability to set a mood and can affect people's emotions and their enjoyment of their surroundings. Plants create serenity, more peaceful places, and better looking or feeling developments.

*The amendment inserted above is suggested to draw attention to the need for water conservation in landscape design and maintenance.*

### C. Xeriscape Landscaping

1. Applying xeriscape landscaping is directly linked to the concept of sustainable landscaping. The water-use standards for landscaping in this Division create the framework for xeriscape landscapes.
2. Xeriscape landscaping incorporates water-conserving designs that take into account soil and drainage factors, microclimates, grouping of plants with similar water requirements, efficient irrigation systems, native vegetation, paving permeability, and low-water-using and drought tolerant vegetation. Xeriscape landscaping is not cactus, rocks and gravel, nor shall "xeri" be interpreted to mean zero.
3. The xeriscape principles in Table B (Xeriscape Principles), apply to all landscaping areas as required by Section 10-50.60.020 (Applicability).

**Table 10-50.60.010.B: Xeriscape Principles**

Good Landscape Planning and Design	Careful consideration of a site's size and shape, soil type, topography, and building configuration is essential in developing a good landscape plan. The function of the space (i.e. its use), the amount of available sun, location of views, regional and microclimate conditions, and a preliminary assessment of landscape watering zones should also be taken into account in early planning of a xeriscape landscape.
Use of Drought Tolerant and Low Water-use Plants	Primarily drought tolerant and low water use plants shall be used. These plants can serve nearly every function. Some provide shade and texture, while others are appropriate for borders, accent areas, seasonal color, and year round greenery. Native wildflowers and grasses are typically suitable for revegetating disturbed areas.
Appropriate Lawn Areas	Lawns require a lot of water to stay green and healthy. Lawns shall only be located in areas where they provide functional benefits. Lawn areas planted close to a building may provide a cooling effect. Lawns should not be planted in odd shaped areas that cannot be watered efficiently. Lawn areas can often be planted with modern, low-water-use, drought-tolerant grasses (Refer to Appendix 3 (City of Flagstaff Landscape Plant List)).
Efficient Irrigation	Install irrigation systems so that they provide an adequate amount of water at the proper time to the root zone of plants. Each plant and vegetative type has its own

	water needs, and the planting arrangement and irrigation system should be designed to reflect those needs. Moisture sensors shall be installed on irrigation controls to measure real time soil moisture. Each water use zone should be on a different valve. Additionally, stormwater runoff should be routed into each area to offset irrigation needs.
Soil Improvement	Organic matter should be added to existing soils to increase water-holding capacity and provide beneficial nutrients to plants. In low water-use zones, loosening the soil may be all that is needed.
Use of Mulches	Organic mulches consisting of wood, bark chips, and plant remnants are preferable, as they are able to hold moisture, cool the surface of the ground, reduce weed growth, slow erosion, and improve the existing soil as they decompose. Inorganic mulches consisting of rock or stone help slow erosion, but do not lower the soil temperature.
Appropriate Maintenance	Xeriscape landscapes require low maintenance, but not no maintenance. To be effective, a xeriscape landscape must be monitored with a program of pruning, weed control, pest control, and irrigation system adjustments.

## 10-50.60.020 Applicability

The provisions of this Division shall apply to new and existing development as follows. Exceptions are provided in Subsection C.

### A. New Developments

All new nonresidential and residential developments shall provide landscaping in compliance with this Division.

### B. Existing Development

A single addition or cumulative additions subsequent to May 7, 1992, that meet the following thresholds, shall to the maximum extent feasible as determined by the Director provide landscaping in compliance with this Division. Where existing site conditions may make it difficult to achieve full compliance as otherwise required below and to ensure that as much as possible the business expansion is successful, landscaping standards may be modified in accordance with Section 10-20.40.090 (Minor Modifications to Development Approvals).

1. An expansion or alteration of an existing nonresidential or residential use that results in a ~~3525~~ percent or more increase in dwelling units, gross floor area, seating capacity, or parking spaces, either with a single or cumulative addition(s) or expansion(s).
2. Change or intensification of a use that increases the required parking by ~~3525~~ percent or more. If the required additional parking is less than ~~3525~~ percent, then landscaping is only required for the new parking spaces in compliance with Section 10-50.60.050 (Landscaping Standards).

3. Developments or uses requiring a Conditional Use Permit to the maximum extent feasible as determined by the Planning Commission.

*The need for this amendment was discussed by the City Council at the May 24<sup>th</sup> work session to make it easier for property owners and business owners to expand their existing buildings and/or businesses. Staff has discussed this issue at length, and after reviewing the LDC noted that important language that provides the Director with some flexibility and discretion was not carried forward into the new Code. This has been inserted. It is staff's experience, that it has not been the requirement for landscaping that has prevented an existing business or building from expanding, and often other factors affect this decision, such as parking limitations associated with the use or expansion, building costs, landlord issues, etc. Staff agrees, however, that the 25% threshold should be increased to 35% as this will make it easier for property owners and building owners. Section 10-20.40.090 (Minor Modifications to Development Approvals) already provides the opportunity for Director to modify otherwise applicable development standards, and thus a reference to this Section has been inserted. Note that the following amendment is required in this Section.*

**Table 10-20.40.090.A: Types of Minor Modifications Allowed**

<u>22.</u>	<u>A reduction in the landscaping requirement for expansions, or change or intensification of use for existing developments (Refer to Section 10-50.60.020 (Applicability)).</u>	<u>Determined on a case-by-case basis</u>
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#### C. Exceptions

The provisions of this Division do not apply to the following:

1. Construction of a new single-family dwelling or of an addition or alteration to an existing single-family dwelling.
2. Single-family detached residence, whether on existing lots in existing single-family subdivisions or in new subdivisions where the landscaping installation and maintenance has been assured as part of a subdivision plat approved in compliance with this Zoning Code.
3. Single-family cluster dwelling residences in the RR and ER Zones.
4. Secondary single-family detached dwellings on the same lot as the primary dwelling, where permitted.
5. Accessory dwelling units.

~~Landscaping in rights-of-way shall comply with the landscaping and plant location requirements found in the Engineering Standards, Title 18 (Landscaping Standards for Rights-of-Way).~~

6.

#### D. Landscaping in Rights-of-Way

Landscaping in rights-of-way shall comply with the landscaping and plant location requirements found in the Engineering Standards, Title 18 (Landscaping Standards for Rights-of-Way).

*The amendment inserted creates a new subsection D as this is more of a standalone standard than an exception.*

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**10-50.60.030 Landscaping Plans****A. Preliminary Landscape Plan**

1. A preliminary landscape plan shall be submitted for review and approval by the Director, at the same time as the concept plan is submitted in compliance with Section 10-20.30.050 (Concept Plan Review).
2. The preliminary landscape plan shall contain the location, description, proposed low impact design measures, and number of proposed materials, including new and existing ground covers, shrubs and trees, and a brief description of the planting and design actions that are intended to meet the requirements of Section 10-50.60.060 (Water Use and Irrigation).

**B. Final Landscape Plan**

A final landscape plan shall be submitted as part of the application for Site Plan Review and Approval (Section 10-20.40.140). A final landscape plan shall be approved by the Director before the issuance of a Building Permit, grading or other construction.

**C. Content and Preparation of the Final Landscape Plan**

Final landscape plans shall contain the following information:

1. Development name, site address and Assessor's Parcel Number;
2. Case number for developments subject to development review at a public hearing;
3. Designer name, address, phone number, and registration stamp or qualification statement;
4. Scale (bar and numerical) and north arrow. Show landscape in sufficient detail to be legible. The landscape plan shall be drawn at the same scale as the site plans and/or engineering drawings to the maximum extent feasible;
5. Property lines, adjacent rights-of-way, building foot prints, the edge of all eaves, roof overhangs and cantilevered structures, parking lots, fences, driveways; intersection sight triangles; walkways; easements; utility lines, poles and boxes, drainage structures, and other site improvements. All shall be drawn to scale with appropriate dimensions and labeled as existing or proposed;
6. Existing and proposed contours based on the proposed grading plan. Contour intervals of one foot are preferred, but a maximum of two foot

contour intervals will be accepted. Exceptions to contours may be made based on site size or if other circumstances require a different interval, as approved by the Director. In addition to contours, spot elevations based on the proposed grading plan shall be added to identify proposed changes in grade;

7. Significant topographical features on the site (drainages, rock outcroppings, etc.);
8. Existing native vegetation on the site indicating native vegetation to be preserved and protected, or removed. Native vegetation must be identified by location, size, and common and botanical name;
9. The direction of runoff flows with the use of flow arrows and the use of runoff including, but not limited to:
  - a. Collected runoff from individual catch basins around single trees, and,
  - b. Collected runoff from basins accepting flow from an entire vehicular use area or roof area;
10. Cut and fill areas and areas of the site disturbed by construction activity;
11. Plant locations and spacing (including staking and soil mix), represented at approximate size at maturity, corresponding to the plant legend;
12. A plant legend that includes both common and botanical plant names, sizes (i.e. height, trunk diameter, and size or diameter of plant at maturity), and the number of required and proposed trees, shrubs, and ground cover quantities;
13. Calculations of the total landscape area and plant quantities, including hydrozones, proposed turf areas, and other oasis areas;
14. Location and Identification of areas of active and passive rainwater harvesting systems as required in the Stormwater Regulations to incorporate low impact development measures with a short description of the type of measure;

*This amendment ensures that the final landscape plan includes the location and area of all active and passive rainwater harvesting systems.*

15. Irrigation design plan identifying system layout and descriptions (e.g., automatic timing devices, backflow protection, moisture sensors, hydrants, sprinkler and bubbler details, drip system layout and specifications, seasonal irrigation schedule, etc.);
16. If applicable, delineation of an on-site nursery for short-term storage of native vegetation to be transplanted;



17. If applicable, indications of proposed common and open space areas on the plan; and,
18. If a development is developed in phases, required landscaping must be completed in sequence with development phases. These phases must be shown on the landscape plan.

**B. Preparation by Qualified Professional**

Final landscape plans shall be prepared by a qualified landscape architect, licensed landscape contractor, certified nurseryman or other professional determined by the Director to be qualified, based on applicant's ability to demonstrate compliance with this Zoning Code.

**C. Review and Approval**

1. The Director shall review each preliminary and final landscape plan to verify its compliance with the provisions of this Division. The Director may approve, deny or require changes to the landscape plan if it is not in compliance.
2. In the review of a final landscape plan the standards provided in Subsection C, above, shall be considered minimum requirements. Provided that the purposes of this Division are still achieved, written requests for alternative landscaping schemes may be submitted to the Director and may be justified only when one or more of the following conditions apply:
  - a. The site has space limitations or an unusual shape;
  - b. Topography, soil, or other site conditions are such that full compliance is impossible or impractical;
  - c. It can be demonstrated that the alternative proposal will result in better environmental or aesthetic quality and conditions; or,
  - d. Safety considerations are involved and no other alternative exists to reduce potential hazards.
3. Revisions to overall development plans or plats may require commensurate revisions to landscape plans to the satisfaction of the Director.
4. The Director may authorize minor changes to an approved landscape plan in compliance with Section 10-20.40.090 (Minor Modifications to Development Standards).

**D. Construction Assurances**

If approved landscaping and watering systems cannot be installed prior to issuance of a Certificate of Occupancy or commencement of the use of a property, a Conditional Certificate of Occupancy may be issued in

accordance with Section 10-20.40.030 (Building Permits and Certificates of Occupancy).

#### E. Inspection Required

1. Prior to issuing a Certificate of Occupancy, the Director shall inspect the subject property to ensure that the landscaping has been installed in compliance with the approved landscape plans.
2. If the inspection determines that there are changes to the final landscape plan, the Director may approve an as-built landscaping plan that reflects all changes if the Director determines that the intent of this Division is achieved.

### 10-50.60.040 Landscape Location Requirements

Landscaping shall be provided in all areas of a site that are subject to development with structures, grading, or the removal of natural vegetation, as identified in this Section. Table A (Application of Landscaping Location Requirements in Zones) provides a summary of applicability and identifies exceptions to areas within transect zones.

**Table 10-50.60.040.A: Application of Landscaping Location Requirements in Zones**

	Non-Transect Zones	Transect Zones					
		T1	T2	T3	T4	T5	T6
Residential Zone Buffers	✓	×	×	✓	✓	×	×
Non-Residential Zone Buffers							
Street Buffer	✓	×	×	×	×	×	×
Peripheral Buffers		×	×	×	×	×	×
Parking Areas	✓	×	✓	✓	✓	✓	×
Other Landscaped Areas	✓	×	✓	✓	×	×	×

#### Key

✓ = Required

×

#### A. Residential Zone ~~Buffers~~Setbacks

1. Residential uses subject to the provisions of this Division shall provide landscaping in setbacks, utility easements, and drainage courses, in compliance with Section 10-50.60.050 (Landscaping Standards), except where:

- a. Occupied by approved structures, paving, decks or patios.
  - b. They are retained in their natural state, and the Director determines that landscaping is not necessary to achieve the purposes of this Division.
  - c. Landscaping would conflict with access to utility infrastructure, however landscaping shall be maintained to the maximum extent feasible.
  - d. No trees shall be allowed in utility easements or natural drainage courses. However, for stabilization purposes, these areas may be seeded in compliance with Subsections C and D below.
2. Parking areas shall be landscaped and unused areas shall be seeded in compliance with Subsections C and D below.
  3. Landscaping standards in affordable housing developments may be reduced in compliance with Division 10-30.20 (Affordable Housing Incentives).

**B. Non-Residential Zone Buffers**

Landscaping shall be applied through landscaping buffers in non-residential zones. There are two types of non-residential landscaping buffers: street buffers and peripheral buffers. These buffers shall be landscaped in compliance with Section 10-50.60.050 (Landscaping Standards).

**1. Street Buffers**

A landscaped street buffer with a minimum width of 10 feet is required along the street frontage of a site as measured from the street property line (see Figure A), except:

- a. Street buffers fronting streets with two traffic lanes may be reduced to five feet. If the street buffer is reduced to five feet adjacent to industrial uses or heavy retail/services uses, a six-foot fence shall be located behind the buffer in compliance with Division 10-50.50 (Fences and Screening). Refer to Figure A for an illustration.
- b. The City Engineer may approve the placement of up to five feet of the required 10-foot width of required landscaping within the adjacent right-of-way.

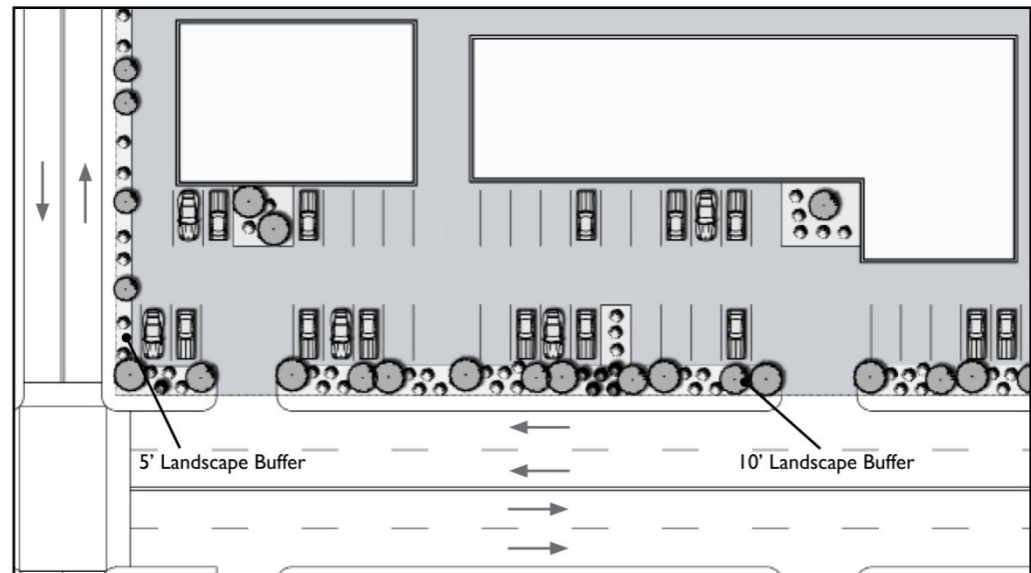


Figure A. Street Buffer

## 2. Peripheral Buffers

Landscaped peripheral buffers shall be located along the outer perimeter of a lot or parcel (i.e. property lines adjacent to other parcels) and shall be provided as determined in Table B (Buffer and Screening Requirements), which ranks land uses and zones based upon their land use intensity and the impact a use will have on adjacent land uses, except:

- a. Where an area 10 feet or more in width has been set aside in compliance with Resource Protection Standards (Division 10-50.90).
- b. Between adjacent sites with shared parking.
- c. Where common driveways or vehicular access easements are located on the property line.
- d. Where an alley, storm water drainage, or other right-of-way 10 feet or more in width physically separates the site from an adjacent property.
- e. Where the peripheral buffer requirement conflicts with access to utility infrastructure, the landscaping requirements may be reduced if required to provide safe access or limit damages to the infrastructure.
- f. Stormwater management facilities may be incorporated into the peripheral buffers if they are designed in compliance with Section 10-50.60.060.F, or in compliance with the City's [Stormwater Regulations](#) ~~LID Manual~~.

**Table 10-50.60.040.B: Buffer and Screening Requirement**

Proposed Use Category <sup>1,4</sup>	Peripheral Buffer Requirement Based on Adjacent Existing Uses or Zone <sup>2</sup>			
	Commercial	Industrial	Resources/ Open Space	Residential
Business Park	15' wide buffer	--	15' wide buffer	15' wide buffer
Industrial, Manufacturing, Processing & Wholesaling	5' wide buffer	--	10' wide buffer	15' wide buffer
Institutional	5' wide buffer	5' wide buffer	5' wide buffer	10' wide buffer
Ranching, Forestry & Resource Use	--	--	--	--
Recreation, Education & Public Assembly	10' wide buffer	10' wide buffer	5' wide buffer	15' wide buffer
Residential	15' wide buffer	15' wide buffer	10' wide buffer	--
Retail Trade	--	5' wide buffer	5' wide buffer	15' wide buffer
Services – General	--	5' wide buffer	10' wide buffer	15' wide buffer
Transportation & Infrastructure <sup>3</sup>	5' wide buffer	5' wide buffer	10' wide buffer	15' wide buffer
Urban Agriculture	5' wide buffer	5' wide buffer	5' wide buffer	5' wide buffer

**End Notes**

<sup>1</sup> Use categories are based off use categories in the land use types tables in Chapter 10-40 (Specific to Zones).

<sup>2</sup> Buffer and screening requirements shall be based on adjacent existing uses. If adjacent sites are vacant, requirements are based on the underlying zone.

<sup>3</sup> With the exception of parking facilities, which are addressed in Subsection C.

<sup>4</sup> Parking areas for all uses adjacent to residential uses shall be screened by a solid fence or wall a minimum of 6 feet in height or a 10-foot wide buffer, to the maximum extent feasible.

**C. Parking Area Landscape Standards - Residential and Non-Residential**

Surface parking areas in all zones shall be landscaped in compliance with this Section. Perimeter and street frontage landscaping is regulated in compliance with Subsections A and B above.

**Table 10-50.60.040.C: Interior Landscaped Area Required per Number of Off-street Parking Spaces**

<b>Parking Spaces Required</b>	<b>Minimum Interior Landscaped Area Required</b>
<b>All Uses (excluding agriculture)</b>	
0 - 7 single loaded spaces 0 - 14 double loaded spaces	None
8 + single loaded spaces 16 + double loaded spaces	30 sf per space <sup>1</sup>

**End Notes**

<sup>1</sup> For Suburban Commercial (SC) and Business Park (BP) 40 sf per space is required.

**1. Amount of Parking Area Landscaping**

- a. Parking area landscaping area shall be required based on number of off-street parking spaces in compliance with Table C (Interior Landscaped Area Required per Number of Off-street Parking Spaces).
- b. Display or storage of equipment or vehicles is not permitted in required landscaped areas.

**2. Interior Parking Area - Landscape Location Requirements**

Interior parking area includes planter areas between parallel rows of parking spaces, terminal islands, and landscape areas between rows of parking spaces. Where required by Table C (Interior Landscaped Area Required per Number of Off-street Parking Spaces) interior parking area landscaping shall meet the following requirements:

**a. Landscape Islands**

For parking lots with eight or more spaces, of the required interior parking area landscaping shall be installed in islands separating adjacent parking spaces or in peninsulas parallel to individual parking spaces (see Figure B).

**b. Terminal Islands**

All rows of parking spaces shall have a terminal island no less than five-feet in width to protect parked vehicles, confine moving traffic to aisles and driveways, and provide space for landscaping (see Figure B).

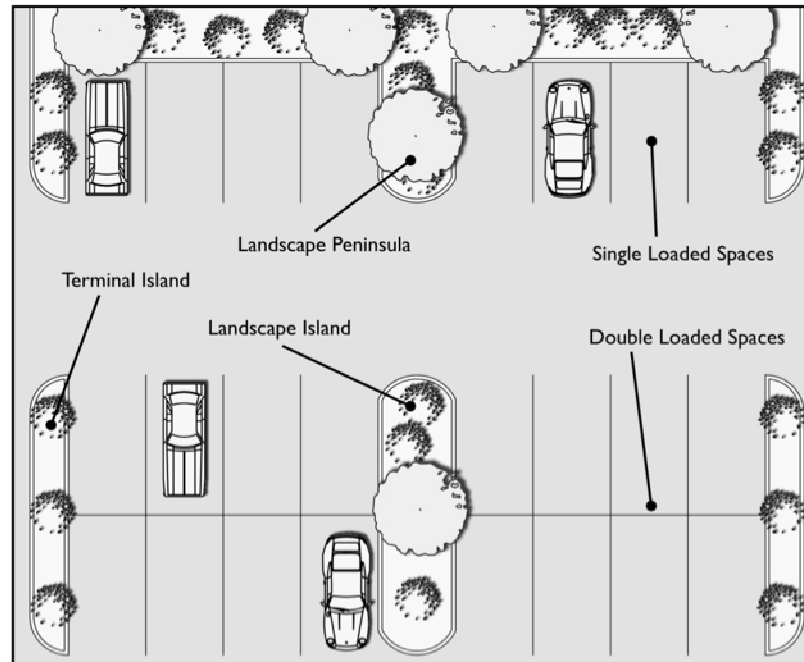


Figure B. Interior Parking Area – Landscape Location Requirements

**c. Interior Parking Area - Landscaping Amount**

Planter areas between parallel rows of parking spaces, terminal islands, and islands separating adjacent parking areas shall have a minimum of two 15-gallon trees and two shrubs or two groundcovers, in compliance with Section 10-50.60.050.B, for every eight parking spaces. Groundcover should cover areas between shrubs based on shrub size at maturity (see Table 10-50.60.050.B (Plant Sizes)).

**e.d. Exception for Solar Collectors**

For the portion of a parking area over which photo-voltaic solar collectors are installed where they also function as shade structures, the minimum requirement for trees shall be waived, and a minimum of three shrubs and three groundcovers shall be planted in compliance with Section 10-50.60.050.B for every eight parking spaces.

*This amendment reflects the Council's direction provided at the May 24<sup>th</sup> work session.*

**3. Screening Parking Areas**

- a. In addition to Subsection 1, planting and screening along the boundaries of parking areas that are adjacent to a street shall be used to break up continuous parking areas by providing color and interest through the use of appropriate landscape materials and through the preservation of existing vegetation.

- b. Landscape screening along the perimeter of parking areas shall be a minimum of three and one-half feet in height. One of the following methods of forming a screen along the full length of the parking area located adjacent to a street shall be used, except where breaks are needed to provide access for pedestrians, bicycles, vehicles or required clear view zone (Refer to Engineering Standards, Title 10, Section 10-06-020 (Intersection Sight Triangles, Clear View Zones)). Figure C illustrates the methods for screening parking.
- (1) Solid fencing or wall meeting the requirements of Division 10-50.50 (Fences and Screening).
  - (2) Shrubs planted at sufficient density to form a significant screen within three years of initial planting. Refer to Table 10-50.60.050.A (Required Plant Quantities) and 10-50.60.050.B (Plant Sizes) for required plant size and quantities for parking lot screening.
  - (3) Any combination of the above.

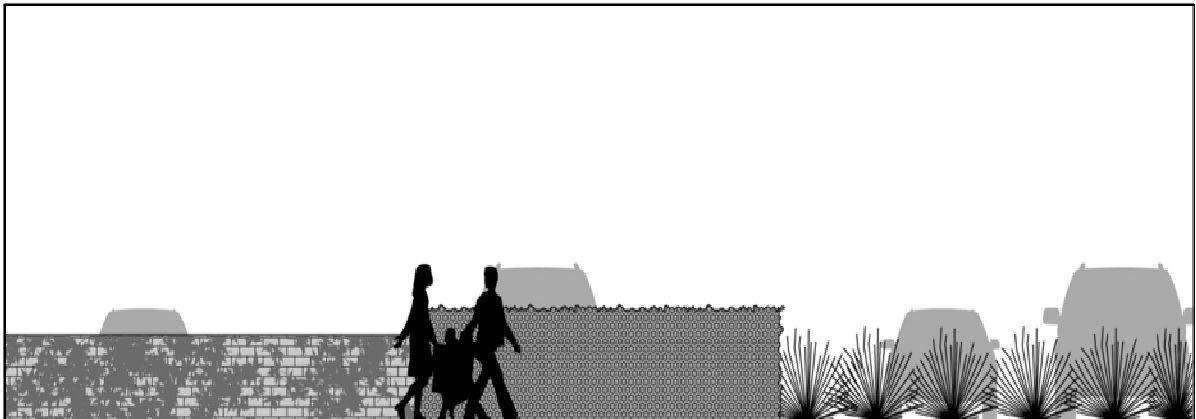


Figure C. Screening of Parking Areas

**4. Landscaping Materials**

Landscaping shall be a combination of ground cover, shrubs, and trees. (See Section 10-50.60.050 (Landscaping Standards)).

**5. Plant Protection**

Landscape areas susceptible to damage by vehicular or pedestrian traffic must be protected by appropriate means, such as curbs, bollards or low walls provided they are not in conflict with applicable standards for intersection sight triangles as established in the Engineering Standards.

**D. Other Landscape Areas - Residential and Non-Residential**

All other areas of the site not specifically addressed in this Section shall be landscaped. This includes all other parts of a site not devoted to decks, patios, structures, driveway and/or parking improvements, lighting, sidewalks, signs, solid waste/recyclable materials collection and storage, and similar improvements. The minimum standards required for other landscape areas shall be in compliance with Section 10-50.60.050 (Landscaping



Standards). This Subsection applies to non-residential and residential uses subject to the provisions of this Division.

**1. Unused Areas**

In all zones, any area of a development site not intended for a specific use, including a commercial pad site intended for future development, shall be seeded in accordance with Title 17 of the Engineering Standards, unless retained in its natural state, and the Director determines that landscaping is not necessary to achieve the purposes of this Division.

**2. Landscaping Around Buildings**

Landscaping areas shall be planted and maintained within 25 feet around buildings (i.e. foundation planting).

~~2.~~

**E. Solar Access**

No tree or shrub planted after the effective date shall be placed so as to cast a shadow on more than 10% of the surface of a solar collector on the property of another at any one time between the hours of 10:00 a.m. and 2:00 p.m. local standard time.

*This amendment proposed by the Sustainability Commission and modified from similar language in the City of Davis (CA) zoning code ensures that solar collectors are not made ineffective because of shadows from trees or shrubs planted on another's property. A definition of "solar collector" is also proposed to be included in Chapter 10-80 (Definitions).*

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**10-50.60.050 Landscaping Standards**

The following standards apply to all landscaping areas unless otherwise noted.

**A. Landscape Design**

**1. Plant Material Considerations**

Plant materials shall be selected from the City of Flagstaff Landscape Plant List (Refer to Appendix 3) taking into account site specific constraints, such as:

- a. Water demand, drought tolerance, appropriateness of native and naturalized species, and geological and topographical conditions;
- b. Color, form, texture, and seasonal characteristics relative to the overall development design;
- c. Soil retention capability in compliance with the xeriscape landscaping principles described in Section 10-50.60.060 (Water Use and Irrigation);

- d. Grouping plants that have similar water use together in distinct hydrozones, including using edible landscaping in compliance with hydrozone standards, (see Section 10-50.60.060.A);
- e. The protection and preservation of native species, appropriate naturalized species, and natural areas;
- f. Using high maintenance plants only for accents; and,
- g. Existing trees preserved on a development site where the area under the canopy remains relatively undisturbed may be credited toward landscape tree requirements, subject to the following standards:
  - (1) Each existing tree that is a minimum of six inches in diameter at breast height (DBH) or 10 feet in height or larger may substitute for the requirement of two evergreen landscape trees.
  - (2) For each existing tree retained in a landscape area, the requirement for shrubs and groundcovers associated with that tree will be waived.

## 2. LID

All landscaping areas that are an integral part of the stormwater management system shall be designed in compliance with the City's [Stormwater RegulationsLID Manual](#).

## B. Plant Material - Quantities and Placement

Landscape plans shall include trees, shrubs, and groundcover that shall be selected and installed in compliance with Section 10-50.60.060 (Water Use and Irrigation) and as follows:

### 1. Required Plant Quantities and Size

- a. Landscape areas shall be planted in compliance with Table A (Required Plant Quantities).

Table 10-50.60.050.A: Required Plant Quantities			
Landscape Area	Trees (On Average)	Shrubs <sup>1,2</sup> (On Average)	Groundcover (On Average)
Street Buffer (Ind. And Business Park Zones)	1 per 15 linear feet	3 per tree	2 per tree
Street Buffer (All other Zones)	1 per 25 linear feet	2 per tree	2 per tree
Peripheral Buffer	1 per 25 linear feet	2 per tree	2 per tree
Parking Area <sup>4</sup>	2 per 8 parking spaces	2 per tree	2 per tree
Parking Lot Screening	Not Required	2 shrubs per parking space adjacent to a street to achieve 80% visual screening <sup>3</sup> Min. Height: 3½ feet	
Building Foundation	1 per 25 linear feet	2 per tree	2 per tree
Unused Areas	Disturbed, unused areas are to be seeded in accordance with Engineering Standards (Title 17)		

**End Notes**

<sup>1</sup> Two one-gallon groundcover plants may be substituted for one required five gallon shrub, unless the shrubs are required for a street buffer or for parking lot screening.

<sup>2</sup> Two one-gallon native shrubs may be substituted for one five-gallon shrub.

<sup>3</sup> A solid fence or wall designed and constructed in accordance with Division 10-50.50 (Fences and Screening Standards) may be substituted for required shrubs, or a combination of fencing/wall and shrubs may be substituted.

<sup>4</sup> In the SC commercial zone, 3 trees per 8 parking spaces shall be required.

- b. Plant materials shall be sized and spaced to achieve immediate effect according to Table B (Plant Sizes).

Table 10-50.60.050.B: Plant Sizes		
	Minimum Planting Required	
<b>Trees</b>	Non-native Trees	Trees shall be 6' tall or 2" caliper
	Native Trees	15-gallon containers
<b>Shrubs</b>	Non-native Shrubs	5-gallon containers
	Native Shrubs	1-gallon containers
<b>Groundcover</b>	1-gallon containers	

## 2. Trees

Tree planting shall comply with the following standards:

- a. Trees may be planted at varying distances apart to create more natural landscape designs provided that the ~~one~~-tree per linear foot requirement established in Table A (Required Plant Quantities) is applied as an average.
- b. A required landscape area that is between 15 and 25 linear feet long shall contain a minimum of one overstory tree.
- ~~b.c.~~ The spacing of trees within landscape areas such as peripheral buffers shall be adjusted to allow solar access to existing solar collectors on adjoining property.

*This is a standard from the City of Tucson landscape code that is also applicable in Flagstaff.*

- ~~c.d.~~ Trees shall not be planted under any structure that may interfere with normal tree growth (e.g., an eave, overhang, balcony, light standard, overhead utility line or other similar structure).
- ~~d.e.~~ Trees planted near structural improvements such as sidewalks or curbs shall be planted at a sufficient distance from the structural improvement to prevent upheaval or soil settling. Where the distance is not available or where the design places the trees closer to the improvement, suitable root system barriers to prevent upheaval or soil settling shall be installed. If the trees are in the public right-of-way, the City Engineer shall approve the root barriers.
- ~~e.f.~~ Trees shall be staked when planted.
- ~~f.g.~~ No trees shall be planted within utility easements or natural drainage courses.

~~g.~~

*~~This idea from the City of Sante Fe landscape code and expanded in the City of Fort Collins code is also applicable in Flagstaff. This suggested amendment was not supported by the Council at the May 24<sup>th</sup> work session.~~*

## 3. Shrubs, Groundcover and Mulch

Groundcover, shrubs and mulch shall meet the following standards:

- a. The landscaped areas must be covered in compliance with Table A (Required Plant Quantities) with trees, shrubs or vegetative ground cover at plant maturity. Plant maturity is based on three-years growth for shrubs and one-year growth for groundcover;

- b. Shrubs, groundcover or other types of plants with similar water requirements should be grouped to achieved the required vegetation coverage as long as they do not conflict with other standards in this Subsection;
- c. Shrubs, groundcover or other types of plants shall be predominantly naturalized, drought tolerant and incorporated into the landscape area based on the hydrozone in compliance with Section 10-50.60.060.A;
- d. Shrubs or groundcover planted adjacent to a walkway, driveway, sidewalk or street shall be placed with the plant center at a distance equal to or greater than one-half the normal width of the plant at maturity;
- e. Artificial shrubs shall not be allowed. Artificial turf may be installed provided it has a permeable base. Any artificial turf area shall not count as required landscape area, and shall not exceed the area allocated for an oasis as defined in Subsection C, below;
- f. Nonturf areas (e.g., shrub beds) shall be top dressed with mulch or approved alternative and supplemented and replaced as needed; and,
- g. Organic mulch (i.e. hard wood mulch, bark chips, and plant remnants) shall be encouraged over the use of inorganic mulch (i.e. crushed rock, pebbles, and stone). Only landscape cloth shall be placed under mulch layers. Impermeable membranes made of plastic or a similar material are not permitted.

#### 4. Planter Width Appropriateness

When plants are intended for screening purposes, an adequate width of planter area shall be provided for the plants to grow and develop as intended.

#### C. Oasis Allowance

An oasis (See Section 10-50.60.060.A) is an area where turf, non-drought tolerant plants and vegetable gardens are permitted. Plants not listed on the City of Flagstaff Landscape Plant List (Refer to Appendix 3) may be used in an oasis if the plants are grouped in separately programmed irrigation areas according to their water requirements. An oasis area is not required, [and neither is it encouraged](#), but is permitted. The location and maximum area on a site that may be used for oasis areas, including those located in a street buffer, are determined as follows.

##### 1. Residential Uses

For multifamily residential uses, an oasis allowance of up to five percent of the total site area or 100 square feet per dwelling unit, whichever is greater, shall be permitted. [Vegetable gardens are not included in the area calculation for an oasis.](#)

**2. All Other Uses**

For all other uses, an oasis allowance equal to, but not more than, two and one-half percent of the site shall be permitted. [Vegetable gardens are not included in the area calculation for an oasis.](#)

**3. Location Standards**

The following ~~standards~~[factors shall be applied](#) ~~will be considered~~ to determine the location of the oasis area:

- a. The oasis is placed on the site near the main building(s) or assembly areas where pedestrian activities are designed to occur or in an active use area;
- b. The oasis is designed for optimum exposure to onsite users;
- c. The oasis is designed as part of an area used for seating, assembly, rest, or dining, or is designed to enhance a main entryway;
- d. The oasis is located in an area of relatively low evaporation potential from wind and heat and is sheltered by walls, buildings or tree stands;
- e. The oasis is located in an area of common recreation and patio facilities in a multi-family development;
- f. Any water harvesting system or other storm water runoff design is integrated with the oasis in compliance with the City's [Stormwater Regulations](#)~~LID Manual~~; and,
- g. The oasis shall not be placed in the public right-of-way.

**4. Street Buffer**

Oasis areas may be located in the street buffer only if:

- a. The oasis areas do not total more than five percent of the area of the street buffer; and,
- b. The non-drought tolerant plants used in the oasis area are flowering, bedding plants used for seasonal color.

**5. Turf**

Turf areas are only allowed within an oasis according to the following:

- a. Turf areas shall be located to mitigate glare and reduce heat near buildings and their openings, including windows and patios, or to serve as an active play area.
- b. Grasses selected for turf area shall have low water use characteristics and be drought resistant. A list of acceptable grasses is provided in the City of Flagstaff Landscape Plant List (Refer to Appendix 3). The

Director may approve other grasses if it can be demonstrated that the proposed species is low water use and drought tolerant.

**6. Use of Edible Landscaping**

Edible landscape plant materials may be incorporated into required landscape areas provided they meet the intent and purpose of this Division. Areas dedicated to the production of food such as vegetable gardens shall not count as required landscape area.

**7. Exceptions**

Oasis allowances (including turf) do not apply to:

- a. Public parks and botanical gardens;
- b. Outdoor recreation facilities, whether under public or private ownership, for public use, schools, day care centers;
- c. Playing areas of golf courses;
- d. Cemeteries; or,
- e. Food production sites such as community gardens.

**8. Opportunity for Greater Oasis Allowance**

The oasis area may be increased by 10 percent if ~~non-potable (greywater), reclaimed water from the City's reclaimed water lines is available, or~~ an active rainwater harvesting system, with a minimum storage capacity of 1,000 gallons, is installed and stored water is used onsite, in compliance with storm water and runoff requirements in Subsection 10-50.60.060.F.

*The amendment suggested below requires that an oasis should be watered primarily by sources other than potable water (passive rainwater harvesting, greywater, and reclaim water). This amendment confirms this intention, and allows for the oasis area to be increased if active rainwater harvesting techniques are employed.*

**D. Height Limits**

Landscape materials located within the required clear view zone shall be selected, placed on a site and maintained in compliance with Engineering Standards Title 10, Section 10-06-020 (Intersection Sight Triangles, Clear View Zones).

**E. Safety Requirements**

Consideration for vehicular and pedestrian fire safety shall be incorporated into all landscape designs. At maturity, plant materials shall not:

1. Constitute a driving hazard by interfering with safe sight distances for vehicular, bicycle or pedestrian traffic;
2. Block pedestrian or bicycle ways;

3. Excessively overshadow a vehicular use area with evergreen trees;
4. Conflict with onsite or offsite overhead utility lines, utility easements, overhead lights or walkway lights;
5. Cause a fire due to proximity to buildings and roofs. The Flagstaff Fire Department shall be consulted, as necessary, to determine safe proximities of vegetation to buildings and roofs; or,
6. Cause damage and upheaval of sidewalks and pavement.

## 10-50.60.060 ~~Hydrozones~~ **Water Use and Irrigation**

The key to the establishment of xeriscape landscaping that conserves water is to arrange plants in appropriate locations and not to interplant them with others that have different (i.e. higher or lower) water requirements. This grouping of plants into "hydrozones" is based on their water needs, and allows them to be irrigated and maintained efficiently. The following requirements conserve water and assist in carrying out xeriscape design principles and low impact development integrated management practices.

*On May 24<sup>th</sup> the Council supported the alternative to the original layout of this division that separates the section on "Hydrozones" from "Water Use and Irrigation" is suggested. This will hopefully help to improve the organization and readability of the Landscaping Standards Division.*

### A. **Hydrozones**

Xeriscape landscaping principles incorporate a hydrozone concept, which In Flagstaff, consists of up to three hydrozones are effective, as show in Table A (Hydrozones) and defined in the following subsections.

All landscape plans shall identify the appropriate hydrozones located on site.

#### 1. **Hydrozone 1**

Hydrozone 1, the oasis zone, is not required, and neither is it encouraged. In hydrozone 1 there are no restrictions on plant selection, and plants with high or moderate water use are permitted that require frequent watering, as well as native or naturalized plants that can also provide the lush green effect desired. ~~is not required, and neither is it encouraged.~~ If proposed, the oasis shall comply with the standards provided in Section 10-50.60.050.C. In the oasis area ~~there are no restrictions on the plants selected, and turf areas lawns~~ are permitted. Due to the water intensive nature of hydrozone 1, passive rainwater harvesting techniques, and the use of greywater and reclaimed water from the City's reclaimed water lines (if available) shall be used to minimize the use of potable water whenever possible. If an irrigation system is requireds for the maintenance of plants in this hydrozone, it shall be valved separately from plants in hydrozones 2 and 3 as the plants in the other zones will have different watering requirements. Using stormwater runoff to offset irrigation needs shall be prioritized in



~~hydrozone 1 due to the water intensive nature of this zone. Permanent or temporary irrigation systems may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation).~~

**2. Hydrozone 2**

This is typically the transition zone between hydrozone 1 (oasis) and hydrozone 3 (native), ~~although in more urban locations such as a commercial site with large parking facilities it may be the predominant hydrozone, in which case hydrozone 1 is not permitted.~~ Plant selection for this hydrozone shall be from the City of Flagstaff Landscape Plant List (Appendix 3) and may be either naturalized plants or native plants, and shall have lower watering requirements than for the oasis zone. Plants in this zone require infrequent supplemental deep watering in addition to natural precipitation. Mulching, the use of active and passive rainwater harvesting systems, and other non-potable water sources with efficient low-volume irrigation systems and can be used to conserve water. If plants selected for hydrozone 2 have a different watering requirement from either hydrozone 1 or 3, then the irrigation system shall be valved separately. ~~Permanent or Temporary irrigation systems~~ may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation)ubsection D.8.

**3. Hydrozone 3**

Hydrozone 3 is usually on the periphery of a development site adjacent to Hydrozone 2. Plant selection for this hydrozone shall be from the City of Flagstaff Landscape Plant List (Appendix 3) and includes those with the greatest drought tolerance, and thus require little, if any, supplemental water once established, except perhaps in times of drought. This includes lowest irrigation requirements, such as native plants, and native vegetation preserved on site, and low-water use naturalized plants. Plants in this hydrozone, if selected with care and in conjunction with water harvesting, may be able to survive without irrigation once established. Mulching, the use of active and passive rainwater harvesting systems, and other non-potable water sources with efficient low-volume irrigation systems and may be used to ensure that plants survive dry periods. ~~Permanent or Temporary irrigation systems~~ may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation)ubsection D.8.

*The amendments to the hydrozones above provide greater detail on the water use requirements and thus plant requirements of each hydrozone. Staff met with landscape architect Pam Symond and Nigel Sparks from Flagstaff Native Plant and Seed, and they provided invaluable assistance with the rewrite of this section.*

**Table 10-50.60.060.A: Hydrozones**

Hydrozone	Plant Selection
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Hydrozone 1	Oasis Zone	No restrictions on the plants selected, in compliance with Section 10-50.60.050.C
Hydrozone 2	Transition Zone	Plants/Vegetation with low watering requirements ( <a href="#">Naturalized and native plants</a> )
Hydrozone 3	Native Zone	<a href="#">Plants/Vegetation with very low watering requirements</a> (Predominantly <sup>1</sup> native plants and native vegetation)

**End Notes**

<sup>1</sup>A minimum of 80% of the plant selection is comprised of natives and the remaining may be naturalized plants and vegetation.

## 10-50.60.0760 Water Use and Irrigation

### B.A. General Water Use and Irrigation Standards

1. Harvested rainwater (active and passive), greywater, or reclaimed water (if available to the site) shall be used to minimize the use of potable water whenever feasible. Applicants shall demonstrate that implementation of alternative water resources is not feasible or restricted by this Code if potable water is proposed to be used for landscape irrigation.
- ~~1-2.~~ All irrigation demands shall be minimized through drought tolerant plant selection and appropriately timed application schedules. The landscape plan shall demonstrate water conservation efforts regardless of the source of the water used for irrigation.

*As suggested by the Council at the May 24<sup>th</sup> work session this amendment ensures that all water used in an irrigation system is conserved, regardless of its source.*

3. Turf areas used for parks, playing areas or sports fields shall be irrigated by harvested rainwater, greywater or reclaimed water, unless it is not available, in which case the use of potable water use is allowed is not allowed for the irrigation of turf areas, except for turf used for parks, playing areas or sports fields where harvested rainwater, greywater use or reclaimed water is not available.
4. The installation of permanent irrigation systems (See Subsection C. below) in any hydrozone is permitted, but is not required. However, it shall be the responsibility of the applicant, lessee, heirs, assigns, agent, homeowners' association, or other liable entity of the property to ensure that the landscaping is effectively maintained and irrigated as necessary (Refer to Section 10-50.60.070 (Maintenance)). The goal is to ensure that all landscape areas are kept alive with a minimum of water especially after the plants are established in which case (depending on the plant species) watering needs may be reduced except in exceptionally dry or windy conditions.

~~2.5. Temporary irrigation systems are appropriate in all hydrozones, and especially in hydrozone 3. If a temporary irrigation system is utilized, it should be in place for at least three summer growing seasons to ensure that the plants are established. Supplementary irrigation or watering may be necessary especially in unusually dry or windy conditions.~~

~~3. All other irrigation demands shall be minimized through drought tolerant plant selection and appropriately timed application schedules. The landscape plan shall demonstrate water conservation efforts, unless reclaimed water is used for irrigation.~~

~~4. Greywater, reclaimed water (if available), or harvested rainwater shall be used to minimize the use of potable water whenever possible. Applicants shall demonstrate that implementation of alternative water resources is not feasible or restricted by this Zoning Code if potable water is proposed to be used for landscape irrigation. If potable water is used for permanent irrigation systems:~~

~~a. These systems shall utilize rain/moisture sensors to minimize the use of applied water;~~

~~b. Drip irrigation shall be used for all single-planted landscaping, with emitters rated for no more than four gallons per hour (GPH); and,~~

~~Microsprinklers rated for no more than 45 GPH may be used for large carpeted plantings.~~

~~c.6. If approved landscaping and watering devices cannot be installed prior to occupancy or commencement of operations, a Conditional Certificate of Occupancy may be issued by the City. In addition to the requirements of Section 10-20.40.030 (Building Permits and Certificates of Occupancy), an applicant shall provide an acceptable form of surety for 120 percent of the estimated cost, accompanied by two or three estimates of the total cost of the approved landscaping and watering system improvements.~~

*Numerous amendments are included above that were supported by the Council at the May 24<sup>th</sup> work session.*

#### ~~C.B.~~            Use of Reclaimed Water

~~1. Sites located adjacent to reclaimed water lines (i.e. the reclaim water line is located in the public right-of-way and next to the site) shall be required to connect to the lines and utilize reclaimed water for the primary water source for irrigation in areas appropriate for direct reuse.~~

~~2. In commercial and institutional zones, irrigation of recreational fields and golf courses shall utilize only reclaimed water.~~

~~3.2. Prior to development plan approval or the issuance of a building permit, the Flagstaff Utilities Division will review the landscape plan for~~

compliance with Arizona Administrative Code Title 18, Chapter 9, Article 7 (Direct Reuse of Reclaimed Water).

- 4.3. Reclaimed water shall not be used in areas designated for edible landscaping or community gardens.
- 5.4. Precautionary Ssignage consistent with the applicable ADEQ and City standards shall be required ~~on turf areas~~ where reclaimed water is applied.
6. ~~The following measures shall be followed when irrigating with reclaimed water:~~
  - a. ~~Application methods shall be used that reasonably preclude human contact with reclaimed water;~~
  - b. ~~Reclaimed water shall not stand on open access areas during normal periods of use;~~
  - c. ~~Reclaimed water shall not come into contact with drinking fountains, water coolers or eating areas; and,~~
  - d. ~~Hose bibs discharging reclaimed water shall be secured to prevent use by the public.~~
7. ~~Signage shall be required on turf areas where reclaimed water is applied, indicating the following in compliance with Chapter 10-50.100 (Sign Standards):~~

*"Turf Area Uses Reclaimed Water"*

*The precautionary statements included above are already included on the Reclaim Water Permit issued by the Utilities Division and therefore do not need to be included in the Zoning Code.*

#### D.C. **Irrigation System Specifications**

1. ~~All required landscape areas shall be irrigated with pe~~Permanent drip-irrigation or low-flow bubbler irrigation systems, or ~~with~~ other low-tech watering systems, shall be designed, installed and maintained to that minimize water use and soil evaporation and prevent water from being wasted through inappropriate application techniques, unless temporary irrigation systems are allowed in compliance with Subsection 8 below.

*At the May 24<sup>th</sup> work session the Council discussed the need to ensure that water was not wasted when applied to landscaped areas.*

2. If potable water is used for permanent irrigation systems:
  - a. These systems shall utilize rain/moisture sensors to minimize the use of applied water;

- b. Drip irrigation shall be used for all single-planted landscaping, with emitters rated for no more than four gallons per hour (GPH); and,
- c. Microsprinklers rated for no more than 45 GPH may be used for large carpeted plantings.

2. *As this section is specific to irrigation standards it has been moved from Section B. "General Irrigation Standards".*

- 3. Irrigation systems shall include an automatic timing controller for landscaping areas greater than one half acre. However, once plants have become established after three summer growing seasons, automatic timers may be turned off to ensure that water is conserved and landscape areas are not overwatered. Hand watering ~~is~~shall be permitted in landscaping areas less than one half acre.
- 4. Rigid irrigation pipes and flexible drip system irrigation lines placed under paved areas shall be contained in pipe sleeves.
- 5. Pipes or lines carrying water under constant and intermittent pressure shall be buried to the City's standard depth for all irrigation systems of 12 to 18 inches.
- 6. Non-pressurized PVC and polyethylene lines shall be buried to a minimum depth of 12-inches.
- 7. Lawn, shrub and bubbler heads closer than 12-inches to any paved surface shall be pop-up heads.
- 8. Spray irrigation systems shall only be used in Hydrozone 1 (oasis) for turf areas.
- 9. Temporary irrigation systems may be used in Hydrozones 2 and 3 ~~for native plants and native vegetation~~, and are not required to be buried. Temporary spray irrigation systems may be used to establish hydro-seeded vegetation and to provide water to existing native vegetation preserved on a site to ensure its survival after construction has been completed.

~~D.~~ **Timing of Installation**

~~If approved landscaping and watering devices cannot be installed prior to occupancy or commencement of operations, a Conditional Certificate of Occupancy may be issued by the City. In addition to the requirements of Section 10-20.40.030 (Building Permits and Certificates of Occupancy), an applicant shall provide an acceptable form of surety for 120 percent of the estimated cost, accompanied by two or three estimates of the total cost of the approved landscaping and watering system improvements.~~

E.D.            **Storm Water Runoff and Water Harvesting**

### 1. Low Impact Development Integration

Low impact development site design techniques and integrated management practices shall be used to comply with the City's [Stormwater Regulations LID Manual](#) on sites that also are required to provide storm water detention.

### 2. Detention/Extended Detention Basins

- a. All above ground detention/extended detention basins shall be treated with a native ground cover seed mix. Where detention basins are in high visibility areas, they shall be shaped and landscaped to provide the natural appearance of the basin, including shrubs and groundcover.
- b. Where detention basins are constructed partially or entirely within buffers or other high-visibility areas on sites:
  - (1) Detention basin must be adequately landscaped to meet the requirements of the landscape area in compliance with Section 10-50.60.050 (Landscaping Standards);
  - (2) All surfaces shall be treated with a native groundcover seed mix, and the design of such basins shall be incorporated into the site plan; and,
  - (3) No trees shall be planted on the berms or dams of the basin unless the basin is entirely excavated.

### ~~3. Rainwater Harvesting~~

~~The City of Flagstaff Stormwater Management Design Manual and LID Manual include standards for active and passive rainwater harvesting. An active rainwater harvesting system is not required if native/drought tolerant plants are installed and passive rainwater harvesting techniques are utilized, or landscape water demand can be met through other sources of non-potable water. Landscape plans shall include passive rainwater harvesting (RWH) for landscape irrigation purposes. Active RWH shall be encouraged, however not required. Passive RWH shall be a primary component of the storm water management system. RWH shall be integrated with grading plans, storm water management plans, and landscape plans in compliance with the City's LID Manual to make maximum use of site storm water runoff for supplemental onsite irrigation purposes.~~

#### ~~a. Passive RWH Harvesting~~

~~Passive RWH techniques include, but are not limited to:~~

- ~~(1) Directing runoff from roof surfaces to landscape area;~~
- ~~(2) Surface collection: Includes the use of swales, bio-swales, parking lot islands, bar ditches, and detention or retention basins; and,~~

- ~~(3) In ground storage: Includes constructed rain gardens, French drains, permeable paving, and collection structures with infiltration fields or galleries. In ground drainage structures shall utilize techniques and materials that have been proven effective, safe and structurally sound.~~

~~b. Active RWH~~

~~Active RWH techniques include, but are not limited to:~~

- ~~(1) Storage and distribution systems: Includes above ground rain barrels, storage tanks and below grade cisterns that use gravity or pumps to distribute water to an irrigation system; and,~~
- ~~(2) Active RWH systems shall be maintained and the water used for landscape irrigation purposes.~~

*After discussion with the Stormwater Management Program it was determined that the best location for the final recommendations of the Council-appointed Rainwater Harvesting Group for active and passive rainwater harvesting was not in the Zoning Code, but rather in the City's existing stormwater regulations. The amendments proposed above, therefore establish a cross reference to the existing stormwater regulations.*

## 10-50.60.0870 Maintenance

### A. Maintenance Required

1. Maintenance of all landscaping shall be the responsibility of the applicant, lessee, heirs, assigns, agent, homeowners' association, or other liable entity of the property and shall consist of regular watering; pruning, mowing, fertilizing, weed removal, and the removal and replacement of dead plants, irrigation systems and landscape features. This shall include maintenance of approved landscaping in the public right-of-way.
- 1.2. Existing non-native invasive trees as determined by the Director, as well as trees that are dead, diseased, injured, in danger of falling upon existing or proposed structures, overhang or abut a building so as to create a potential fire hazard, interfere with the growth of other trees or existing utilities, or are located within sight lines at intersection streets and driveways may be cut down and removed. Such tree(s) are not required to be replaced with new trees.

*At the May 24<sup>th</sup> work session the City Council discussed the need for including language into either the Landscape Standards Division or the Resource Protection Standards Division of the new Code for the legitimate removal of invasive trees or trees that are dead, diseased or hazardous. Staff suggests that the best place in the Code for this amendment is this section of the Landscaping Standards so that it can be applied to all properties in the City (i.e. within the RPO as well as properties not subject to the RPO).*



- 2.3. The applicant or liable entity in control of any private premises shall at all times maintain the premises free of litter and weeds in compliance with City Code Title 6 (Police Regulations) and this Division.
- 3.4. Maintenance of approved landscaping in rights-of-way, including street trees, shall be maintained in compliance with Engineering Standards Title 18, Chapter 18-05 (Maintenance).
- 4.5. Any plant materials included in an approved landscaping plan that do not survive after installation shall be replaced with plant material(s) of the same or like species of equal size within the next planting season but, in any event, within six months of the plant's demise. Failure to replace said plant materials within the specified time period shall be enforced in compliance with the Enforcement provisions of Division 10-20.110 (Enforcement). Enforcement of maintenance is through a maintenance agreement. Before final building inspection or the issuance of a Certificate of Occupancy, the applicant shall enter into the landscape maintenance agreement with the City to guarantee proper maintenance in compliance with Subsection A, above. The agreement shall ensure that if the landowner or subsequent owners fails to maintain the required/installed site improvements, the City will be able to file an appropriate lien(s) against the property in order to accomplish the required maintenance. The form and content of the agreement shall be approved by the City attorney and the Director.

*This amendment substitutes existing language from the LDC for requirements suggested by the planning consultants regarding landscape maintenance. It is staff's opinion that the existing LDC provisions are cleaner and easier to enforce, and involve significantly less staff resources. A cross reference to the Enforcement Division of the Code is also included.*

## **B. Use of Pesticides and Herbicides**

### **1. General**

If pesticides and herbicides are used in landscape areas, organic pest control methods are preferred over synthetic pesticide use. Pesticides shall be applied in compliance with the Arizona Department of Environmental Quality (ADEQ) "Groundwater Protection List" and the "Best Management Practices" for pesticide and herbicide application.

### **2. Riparian corridor watercourse, wetland, or storm water drainage**

Pesticides, herbicides and fertilizers shall not be applied within 50 feet of a riparian corridor watercourse, wetland, or stormwater drainage except as allowed by the Director for the following circumstances and when pesticide or herbicide applications will be done by a City approved applicator:

- a. The State or local Health Department recommends or directs their use to address a threat to public health;



- b. A county, State, or federal agency with jurisdiction directs their use for control of a State listed noxious weed or plant pests covered by the Arizona State Department of Agriculture plant pest program and non-chemical alternatives have been evaluated and deemed ineffective;
- c. The Director finds that the use of pesticides and herbicides will have no adverse impact to fish and wildlife. Such a determination may be in the form of best management practices or an integrated pest management plan;
- d. The use of a herbicide to control invasive plants would have less overall environmental impact than other control strategies; or,
- e. There is a serious threat to public safety, health or the environment.

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